

2/12/02

=> file reg  
 COST IN U.S. DOLLARS  
 FULL ESTIMATED COST

SINCE FILE	TOTAL
ENTRY	SESSION
0.15	0.15

FILE 'REGISTRY' ENTERED AT 16:07:51 ON 12 FEB 2002  
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STRUCTURE FILE UPDATES: 11 FEB 2002 HIGHEST RN 391593-47-8  
 DICTIONARY FILE UPDATES: 11 FEB 2002 HIGHEST RN 391593-47-8

TSCA INFORMATION NOW CURRENT THROUGH July 7, 2001

Please note that search-term pricing does apply when  
 conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES  
 for more information. See STNote 27, Searching Properties in the CAS  
 Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

The P indicator for Preparations was not generated for all of the  
 CAS Registry Numbers that were added to the H/Z/CA/CAplus files between  
 12/27/01 and 1/23/02. Use of the P indicator in online and SDI searches  
 during this period, either directly appended to a CAS Registry Number  
 or by qualifying an L-number with /P, may have yielded incomplete results.  
 As of 1/23/02, the situation has been resolved. Also, note that searches  
 conducted using the PREP role indicator were not affected.

Customers running searches and/or SDIs in the H/Z/CA/CAplus files  
 incorporating CAS Registry Numbers with the P indicator between 12/27/01  
 and 1/23/02, are encouraged to re-run these strategies. Contact the  
 CAS Help Desk at 1-800-848-6533 in North America or 1-614-447-3698,  
 worldwide, or send an e-mail to [help@cas.org](mailto:help@cas.org) for further assistance or to  
 receive a credit for any duplicate searches.

```
=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Al and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      5319 0.01-0.1/AL
      3695666 2/O
L1      196 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/AL AND 2/O

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Mg and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      8442 0.01-0.1/MG
      3695666 2/O
L2      124 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/MG AND 2/O

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Sr and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      7678 0.01-0.1/SR
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3695666 2/O
L3      15 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/SR AND 2/O

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/La and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      5458 0.01-0.1/LA
3695666 2/O
L4      4 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/LA AND 2/O

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Ce and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      3052 0.01-0.1/CE
3695666 2/O
L5      5 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/CE AND 2/O

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/V and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      1387 0.01-0.1/V
3695666 2/O
L6      8 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/V AND 2/O

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Ti and 2/O
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      5556 0.01-0.1/TI
3695666 2/O
L7      32 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/TI AND 2/O

=> s 11-17
L8      348 (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7)

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Al and 1.9-1.99/O and
0.01-0.1/F
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      5319 0.01-0.1/AL
      3562 1.9-1.99/O
      1150 0.01-0.1/F
L9      3 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/AL AND 1.9-1.9
9/O AND 0.01-0.1/F

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Mg and 1.9-1.99/O and
0.01-0.1/F
      78728 1-1.1/LI
      15147 0-0.99/NI
      13914 0-0.98/CO
      8442 0.01-0.1/MG
      3562 1.9-1.99/O
      1150 0.01-0.1/F
L10     2 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/MG AND 1.9-1.9
9/O AND 0.01-0.1/F

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Sr and 1.9-1.99/O and
0.01-0.1/F

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78728 1-1.1/LI
15147 0-0.99/NI
13914 0-0.98/CO
7678 0.01-0.1/SR
3562 1.9-1.99/O
1150 0.01-0.1/F
L11      0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/SR AND 1.9-1.9
          9/O AND 0.01-0.1/F

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/La and 1.9-1.99/O and
0.01-0.1/F
78728 1-1.1/LI
15147 0-0.99/NI
13914 0-0.98/CO
5458 0.01-0.1/LA
3562 1.9-1.99/O
1150 0.01-0.1/F
L12      2 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/LA AND 1.9-1.9
          9/O AND 0.01-0.1/F

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Ce and 1.9-1.99/O and
0.01-0.1/F
78728 1-1.1/LI
15147 0-0.99/NI
13914 0-0.98/CO
3052 0.01-0.1/CE
3562 1.9-1.99/O
1150 0.01-0.1/F
L13      0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/CE AND 1.9-1.9
          9/O AND 0.01-0.1/F

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/V and 1.9-1.99/O and
0.01-0.1/F
78728 1-1.1/LI
15147 0-0.99/NI
13914 0-0.98/CO
1387 0.01-0.1/V
3562 1.9-1.99/O
1150 0.01-0.1/F
L14      0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/V AND 1.9-1.99
          /O AND 0.01-0.1/F

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Ti and 1.9-1.99/O and
0.01-0.1/F
78728 1-1.1/LI
15147 0-0.99/NI
13914 0-0.98/CO
5556 0.01-0.1/TI
3562 1.9-1.99/O
1150 0.01-0.1/F
L15      0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/TI AND 1.9-1.9
          9/O AND 0.01-0.1/F

=> s 19-115
L16      7 (L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15)

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Al and 1.9-1.99/O and
0.01-0.1/S
78728 1-1.1/LI
15147 0-0.99/NI
13914 0-0.98/CO
5319 0.01-0.1/AL

```

3562 1.9-1.99/O  
 915 0.01-0.1/S  
 L17 0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/AL AND 1.9-1.9  
 9/O AND 0.01-0.1/S

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Mg and 1.9-1.99/O and  
 0.01-0.1/S

78728 1-1.1/LI  
 15147 0-0.99/NI  
 13914 0-0.98/CO  
 8442 0.01-0.1/MG  
 3562 1.9-1.99/O  
 915 0.01-0.1/S  
 L18 0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/MG AND 1.9-1.9  
 9/O AND 0.01-0.1/S

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Sr and 1.9-1.99/O and  
 0.01-0.1/S

78728 1-1.1/LI  
 15147 0-0.99/NI  
 13914 0-0.98/CO  
 7678 0.01-0.1/SR  
 3562 1.9-1.99/O  
 915 0.01-0.1/S  
 L19 0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/SR AND 1.9-1.9  
 9/O AND 0.01-0.1/S

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/La and 1.9-1.99/O and  
 0.01-0.1/S

78728 1-1.1/LI  
 15147 0-0.99/NI  
 13914 0-0.98/CO  
 5458 0.01-0.1/LA  
 3562 1.9-1.99/O  
 915 0.01-0.1/S  
 L20 0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/LA AND 1.9-1.9  
 9/O AND 0.01-0.1/S

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Ce and 1.9-1.99/O and  
 0.01-0.1/S

78728 1-1.1/LI  
 15147 0-0.99/NI  
 13914 0-0.98/CO  
 3052 0.01-0.1/CE  
 3562 1.9-1.99/O  
 915 0.01-0.1/S  
 L21 0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/CE AND 1.9-1.9  
 9/O AND 0.01-0.1/S

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/V and 1.9-1.99/O and  
 0.01-0.1/S

78728 1-1.1/LI  
 15147 0-0.99/NI  
 13914 0-0.98/CO  
 1387 0.01-0.1/V  
 3562 1.9-1.99/O  
 915 0.01-0.1/S  
 L22 0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/V AND 1.9-1.99  
 /O AND 0.01-0.1/S

=> s 1-1.1/Li and 0-0.99/Ni and 0-0.98/Co and 0.01-0.1/Ti and 1.9-1.99/O and  
 0.01-0.1/S

78728 1-1.1/LI  
15147 0-0.99/NI  
13914 0-0.98/CO  
5556 0.01-0.1/TI  
3562 1.9-1.99/O  
915 0.01-0.1/S

L23           0 1-1.1/LI AND 0-0.99/NI AND 0-0.98/CO AND 0.01-0.1/TI AND 1.9-1.9  
              9/O AND 0.01-0.1/S

=> s 117-123

L24           0 (L17 OR L18 OR L19 OR L20 OR L21 OR L22 OR L23)

=> s 18 or L16 or L24

L25           355 L8 OR L16 OR L24

=> s 125

L26 145 L25

=> s 126 and positive and battery

53704 POSITIVE

89846 BATTERY

L27 4 L26 AND POSITIVE AND BATTERY

=> d 127 1-4 ibib

L27 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:659457 CAPLUS

DOCUMENT NUMBER: 135:184396

TITLE: Manufacture of **positive** electrode material  
for Li-ion **battery**

INVENTOR(S): Liu, Renmin; Wu, Guoliang; Tu, Hailing; Yang, Xinhe;  
Huang, Songtao; Lu, Shigang; Jin, Weihua; Yao,  
Jianming; Jia, Yulan; You, Zhongyuan

PATENT ASSIGNEE(S): Beijing General Inst. of Non-Ferrous Metals, Peop.  
Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10 pp.  
CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
CN 1289738	A	20010404	CN 1999-119446	19990927

L27 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:839606 CAPLUS

DOCUMENT NUMBER: 134:6914

TITLE: Studies on lithium nickel oxide as **positive**  
active material for lithium ion polymer  
**battery**

AUTHOR(S): Inamasu, Tokuo; Katayama, Yoshihiro; Arai, Shigekatsu;  
Nakagome, Tatsuji

CORPORATE SOURCE: Research Development Center, Yuasa Corp., Japan

SOURCE: Yuasa Jiho (2000), 89, 44-48  
CODEN: YUJIAX; ISSN: 0513-6342

PUBLISHER: Yuasa Koporeshon

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

L27 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:147656 CAPLUS

DOCUMENT NUMBER: 130:198781

TITLE: Manufacture of lithium-containing metal oxides for  
**positive** electrode in lithium secondary  
**battery**

INVENTOR(S): Matsui, Yasushi; Shirao, Masatoshi

PATENT ASSIGNEE(S): Showa Denko K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11060244	A2	19990302	JP 1998-42289	19980224
US 6207325	B1	20010327	US 1998-80346	19980518

PRIORITY APPLN. INFO.:

JP 1997-128930	A	19970519
JP 1997-151182	A	19970609
JP 1998-42289	A	19980224
US 1998-75999	P	19980226

L27 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2002 ACS  
 ACCESSION NUMBER: 1999:61684 CAPLUS  
 DOCUMENT NUMBER: 130:141596  
 TITLE: Development of LiNiO2 **positive** active materials for lithium-ion batteries  
 AUTHOR(S): Nagata, Mikito; Komatsu, Shigeo; Tukamoto, Hisashi; Mizutani, Minoru  
 CORPORATE SOURCE: Japan Storage Battery Co. Ltd., Japan  
 SOURCE: GS News Tech. Rep. (1998), 57(2), 15-19  
 CODEN: GSNTAA; ISSN: 0385-7204  
 PUBLISHER: Nippon Denchi K.K.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Japanese

=> s 127 1-4 ab  
 MISSING OPERATOR L27 1-4  
 The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> d 127 1-4 ab

L27 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2002 ACS  
 AB The process comprises: using cobalt oxides, Li compds., Al compds. and/or Ni compds. as raw materials; batching based on formula  $\text{Li}_x\text{Co}_y\text{M}_1\text{-yO}_2$ , where  $0.96 \leq x \leq 1.08$ ,  $0 \leq y \leq 1$ , and  $\text{M} = \text{Al}$  and/or  $\text{Ni}$ ; milling, loading into a container, sintering in furnace at 500-750.degree. in zone 1 at the moving speed of 0.1-10 cm/min, and at 750-950.degree. in zone 2 s at the same moving speed; and cooling. Preferably, the cobalt oxides are  $\text{CoO}$ ,  $\text{Co}_2\text{O}_3$ , and/or  $\text{Co}_3\text{O}_4$ ; the Li compds. are  $\text{LiNO}_3$ ,  $\text{Li}_2\text{CO}_3$ ,  $\text{Li}_2\text{C}_2\text{O}_4$ ,  $\text{Li}_2\text{O}$ , and/or  $\text{LiOH}$ ; the Al or Ni compd. is  $\text{Al}_2\text{O}_3$ ,  $\text{NiO}$ ,  $\text{Al}(\text{OH})_3$ ,  $\text{Ni}(\text{OH})_3$ , Al acetate, Ni acetate,  $\text{Al}(\text{NO}_3)_3$ ,  $\text{Ni}(\text{NO}_3)_3$ ,  $\text{Al}_3(\text{CO}_3)_2$ ,  $\text{Ni}_3(\text{CO}_3)_2$ , Al oxalate, or Ni oxalate; and the sintering is carried out in air. The title process has low prodn. cost and is suitable for large scale prodn.

L27 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS  
 AB Recently we built and tested a lithium ion polymer **battery** using  $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$  as the pos. active material to qualify its safety and character. The performance of the **battery** was the same as that with  $\text{LiCoO}_2$  except for the capacity. In our safety test, neither venting nor fire was obsd. Currently the use of  $\text{LiCoO}_2$  is generally common as the cathode material of a lithium ion **battery**. Although  $\text{LiNiO}_2$  is recently gathering attention because of a higher capacity and a lower productive cost, its practical use is delaying due to the doubt on its safety. Recently we built and tested a lithium ion polymer **battery** using  $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$  as the pos. active material to qualify its safety and character. The performance of the **battery** was the same as that with  $\text{LiCoO}_2$  except for the capacity. In our safety test, neither venting nor fire was obsd.

L27 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2002 ACS  
 AB The title compds. having  $\alpha\text{-NaFeO}_2$  crystal structure and a general formula  $\text{LiNi}_x\text{Co}_y\text{Al}_z\text{O}_2$  where  $0.70 \leq x < 0.85$ ,  $0.05 \leq y \leq 0.20$ ,  $0.10 \leq z \leq 0.25$ , and  $x+y+z=1.0$ , the  $\Delta 2\theta$  is

0.520-0.700.degree. for the peak positions of plane (018) and plane (110) in an X-ray diffraction pattern using CuK.alpha. as energy source. The compds. can be used as pos. electrode materials in a lithium secondary **battery**.

L27 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2002 ACS

AB The effect of partial substitution of Ni in LiNiO<sub>2</sub> for Co and Al on its electrochem. characteristics has been investigated. The Co 20% substitution improved cycle life. XRD study suggested that this was due to the alleviation of the structural deterioration at 4.2 V [vs. Li/Li<sup>+</sup>]. The exothermic reaction peak of Li(Ni<sub>0.84</sub>Co<sub>0.16</sub>)<sub>1-2</sub>Al<sub>2</sub>O<sub>2</sub> in DSC measurement became broader with increase of the amt. of substituted Al. The Al substitution gave rise to the increase of irreversible capacity at the first cycle. XRD study indicated that this was due to the decrease of the Li occupancy of the 3a site in [Li<sub>1-.alpha.</sub>(Ni, Co, Al).alpha.]<sub>3</sub>a[(Ni, Co, Al)]<sub>3</sub>bO<sub>2</sub>. The improved synthesis condition for z=0.03 increased the Li occupancy of the 3a site. Li(Ni<sub>0.84</sub>Co<sub>0.16</sub>)<sub>0.97</sub>Al<sub>0.03</sub>O<sub>2</sub> obtained by the improved synthesis condition showed high capacity d. of 185 mAh/g, small irreversible capacity of 25 mAh/g at the first cycle, good cycle life and improved thermal stability.

=> d 127 1-4 kwic

L27 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2002 ACS

TI Manufacture of **positive** electrode material for Li-ion **battery**

ST lithium cobalt aluminum nickel oxide **battery** electrode; cobalt oxide lithium nitrate **battery** electrode; lithium carbonate nickel hydroxide **battery** electrode; lithium oxalate nickel oxide **battery** electrode; lithium hydroxide alumina lithia **battery** electrode

IT Secondary batteries

(lithium; manuf. of pos. electrode material for Li-ion **battery**)

IT **Battery** electrodes

(manuf. of pos. electrode material for Li-ion **battery**)

IT **355412-38-3P**

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(electrode material; manuf. of pos. electrode material for Li-ion **battery**)

IT 139-12-8, Aluminum acetate 373-02-4, Nickel acetate 553-91-3, Lithium oxalate (Li<sub>2</sub>C<sub>2</sub>O<sub>4</sub>) 554-13-2, Lithium carbonate (Li<sub>2</sub>CO<sub>3</sub>) 814-87-9, Aluminum oxalate 1307-96-6, Cobaltous oxide, processes 1308-04-9, Cobalt oxide (Co<sub>2</sub>O<sub>3</sub>) 1308-06-1, Cobalt oxide (Co<sub>3</sub>O<sub>4</sub>) 1310-65-2, Lithium hydroxide (LiOH) 1313-99-1, Nickel oxide (NiO), processes 1344-28-1, Alumina, processes 7790-69-4 12057-24-8, Lithium oxide (Li<sub>2</sub>O), processes 12125-56-3, Nickel hydroxide (Ni(OH)<sub>3</sub>) 13473-90-0, Aluminum nitrate (Al(NO<sub>3</sub>)<sub>3</sub>) 14455-29-9, Aluminum carbonate 15099-34-0, Nickel nitrate (Ni(NO<sub>3</sub>)<sub>3</sub>) 17237-93-3, Nickel carbonate 20543-06-0, Nickel oxalate 21645-51-2, Aluminum hydroxide (Al(OH)<sub>3</sub>), processes  
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(starting material; for manuf. of pos. electrode material for Li-ion **battery**)

L27 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS

TI Studies on lithium nickel oxide as **positive** active material for lithium ion polymer **battery**

AB Recently we built and tested a lithium ion polymer **battery** using LiNi<sub>0.8</sub>Co<sub>0.15</sub>Al<sub>0.05</sub>O<sub>2</sub> as the pos. active material to qualify its safety



and character. The performance of the **battery** was the same as that with LiCoO<sub>2</sub> except for the capacity. In our safety test, neither venting nor fire was obsd. Currently the use of LiCoO<sub>2</sub> is generally common as the cathode material of a lithium ion **battery**. Although LiNiO<sub>2</sub> is recently gathering attention because of a higher capacity and a lower productive cost, its practical use is delaying due to the doubt on its safety. Recently we built and tested a lithium ion polymer **battery** using LiNi<sub>0.8</sub>Co<sub>0.15</sub>Al<sub>0.05</sub>O<sub>2</sub> as the pos. active material to qualify its safety and character. The performance of the **battery** was the same as that with LiCoO<sub>2</sub> except for the capacity. In our safety test, neither venting nor fire was. . .

ST **battery** cathode lithium nickel oxide; safety **battery**  
cathode lithium nickel oxide

IT **Battery** cathodes  
Safety

(lithium nickel oxide as cathode material for lithium ion polymer **battery**)

IT Secondary batteries

(lithium; lithium nickel oxide as cathode material for lithium ion polymer **battery**)

IT 143623-51-2, Cobalt lithium nickel oxide Co<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>  
**193214-24-3**, Aluminum cobalt lithium nickel oxide  
Al<sub>0.05</sub>Co<sub>0.15</sub>LiNi<sub>0.80</sub>O<sub>2</sub>

RL: DEV (Device component use); USES (Uses)

(lithium nickel oxide as cathode material for lithium ion polymer **battery**)

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TI Manufacture of lithium-containing metal oxides for **positive**  
electrode in lithium secondary **battery**

AB . . . diffraction pattern using CuK.alpha. as energy source. The  
comps. can be used as pos. electrode materials in a lithium secondary  
**battery**.

ST aluminum cobalt lithium nickel oxide electrode; secondary **battery**  
pos electrode lithium oxide

IT **Battery** electrodes

(manuf. of lithium-contg. metal oxides for pos. electrode in lithium  
secondary **battery**)

IT 220760-08-7P, Aluminum cobalt lithium nickel oxide  
(Al<sub>0.12</sub>Co<sub>0.05</sub>LiNi<sub>0.83</sub>O<sub>2</sub>) 220760-09-8P, Aluminum cobalt lithium nickel  
oxide (Al<sub>0.15</sub>Co<sub>0.05</sub>LiNi<sub>0.80</sub>O<sub>2</sub>) 220760-10-1P, Aluminum cobalt lithium  
nickel oxide (Al<sub>0.11</sub>Co<sub>0.07</sub>LiNi<sub>0.82</sub>O<sub>2</sub>) 220760-11-2P, Aluminum cobalt  
lithium nickel oxide (Al<sub>0.11</sub>Co<sub>0.16</sub>LiNi<sub>0.73</sub>O<sub>2</sub>) **220760-12-3P**,  
Aluminum cobalt lithium nickel oxide (Al<sub>0.1</sub>-0.25Co<sub>0.05</sub>-0.2LiNi<sub>0.7</sub>-0.85O<sub>2</sub>)

RL: IMF (Industrial manufacture); PREP (Preparation)

(manuf. of lithium-contg. metal oxides for pos. electrode in lithium  
secondary **battery**)

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TI Development of LiNiO<sub>2</sub> **positive** active materials for lithium-ion  
batteries

ST **battery** cathode lithium nickel oxide; cobalt lithium nickel  
oxide cathode **battery**; aluminum lithium nickel oxide cathode  
**battery**

IT **Battery** cathodes

Lithium secondary batteries

(development of LiNiO<sub>2</sub> pos. active materials for lithium-ion batteries)

IT 12031-65-1, Lithium nickel oxide linio2 113066-89-0, Cobalt lithium  
nickel oxide Co<sub>0.2</sub>LiNi<sub>0.80</sub>O<sub>2</sub> 116327-69-6, Cobalt lithium nickel oxide  
Co<sub>0.1</sub>LiNi<sub>0.90</sub>O<sub>2</sub> **220026-82-4**, Aluminum cobalt lithium nickel oxide  
(Al<sub>0.03</sub>Co<sub>0.16</sub>Li<sub>0.3</sub>Ni<sub>0.81</sub>O<sub>2</sub>) **220026-87-9**, Aluminum cobalt lithium  
nickel oxide (Al<sub>0.1</sub>Co<sub>0.14</sub>Li<sub>0.3</sub>Ni<sub>0.76</sub>O<sub>2</sub>) 220026-92-6, Aluminum cobalt

lithium nickel oxide ( $\text{Al}_{0.15}\text{Co}_{0.14}\text{Li}_{0.3}\text{Ni}_{0.71}\text{O}_2$ )

RL: DEV (Device component use); USES (Uses)

(development of  $\text{LiNiO}_2$  pos. active materials for lithium-ion batteries)